

CHAPTER 4.5

NATURAL HAZARD AND HILLSIDE DEVELOPMENT PROVISIONS

Section 4.5.10 - PURPOSES - NATURAL HAZARD PROVISIONS

Without establishing any priority, the purposes of this Chapter are intended to:

- a. Reduce flood damage and loss of life in areas subject to periodic flooding;
- b. Reduce damage and loss of life from other Natural Hazards, including steep slopes, landslide risk areas, and landslide-related risk areas;
- c. Implement the requirements of Statewide Planning Goal 7 - which relates to Areas Subject to Natural Disasters and Hazards;
- d. Implement some of the land use aspects of the City's Stormwater Master Plan, as well as some aspects of the City's Endangered Species Act Salmon Response Plan;
- e. Through Floodplain regulation, contribute to the Properly Functioning Condition of Streams and rivers and address, in part, the water quality aspects of Statewide Planning Goal 6;
- f. Manage stormwater drainage in a manner that:
 - 1. Maintains the Properly Functioning Conditions of Streams;
 - 2. Provides for the conveyance and temporary storage of floodwater;
 - 3. Reduces floodwater velocity;
 - 4. Facilitates sediment deposition in the Floodplain;
 - 5. Provides an opportunity for groundwater recharge; and
 - 6. Promotes other Stormwater and Floodplain functions.

These provisions are also intended to minimize maintenance costs, eliminate potential hazards before they occur, and protect properties and persons adjacent to drainageways and to other Natural Hazard areas; and

- g.** Implement requirements for the City's participation in the National Flood Insurance Program, including the Community Rating System.

In order to assist in the furtherance of these purposes, where not required, creation of open space tracts is encouraged within areas designated as Natural Resources or Natural Hazards on the Comprehensive Plan and Official Zoning Maps.

Section 4.5.20 - APPLICABILITY

4.5.20.01 - Which Natural Hazards are Subject to this Chapter -

a. These provisions apply to:

1. Public and private properties in the 100-year Floodplain of rivers and local Streams;
2. Areas with slopes equal to or greater than 10 percent;
3. High landslide risk areas;
4. Existing landslide areas; and
5. Landslide debris run-out areas.

b. Mapping of Natural Hazards -

1. Natural Hazards Map - The Natural Hazard areas in "a," above, are mapped on the Corvallis Natural Hazards Map.

The Flood Insurance Study for the City of Corvallis, dated July 2, 1984, and any revisions thereto, with accompanying Flood Insurance Rate Maps (FIRM) and Flood Boundary & Floodway Maps of Corvallis, Oregon, dated January 3, 1985, and any revisions thereto, are the basis for establishing areas of special flood hazard (100-year Floodplain) and are hereby adopted by reference and declared to be part of this Ordinance.

2. Exclusion of Corvallis Fault Line and Liquefaction Soils - Hazards associated with the Corvallis Fault Line and liquefaction soils are not addressed as part of this Code. Hazards associated with the Corvallis Fault Line, and with fault lines in general, are difficult to anticipate. This is in part because the Fault has not been precisely mapped and

in part because other faults may exist in the area which are not yet known. The hazards posed by liquefaction soils can be addressed by the application of more stringent building construction requirements. However, the City will have a map(s) available for informational purposes to show the approximate location of the Corvallis Fault Line and the location of liquefaction soils. These hazards may need to be addressed per the requirements of the adopted Building Code and/or per the recommendations of geologic studies, etc.

4.5.20.02 - Greater Restrictions

This Chapter is not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this Chapter and any other ordinance, easement, covenant, or deed restriction conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

4.5.20.03 - Exceptions

Chapter 4.11 - Minimum Assured Development Area (MADA) explains how Minimum Assured Development Area (MADA) is determined. If the application of Natural Hazard regulations outside prohibited areas, or if the cumulative impact of such Natural Hazard regulations and the application of the regulations in Chapter 4.12 - Significant Vegetation Protection Provisions and Chapter 4.13 - Riparian Corridor and Wetland Provisions would limit the developable portion of a property below the property's MADA, then development will be allowed on the property, to the degree necessary to achieve the MADA, as explained in Chapter 4.11 - Minimum Assured Development Area. However, development is prohibited in certain areas, regardless of MADA, as outlined in Section 4.11.50.05 of Chapter 4.11 - Minimum Assured Development Area.

Section 4.5.30 - DISCLAIMER OF LIABILITY

The degree of flood and other Natural Hazard protection required by this Chapter is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods and hazard events can and will occur on rare occasions. Flood heights may be increased by man-made or natural causes. Areas impacted by other Natural Hazards may differ from those shown on the Corvallis Natural Hazards Map. This Chapter does not imply that land outside the areas of special flood hazards or Uses permitted within such areas will be free from flooding or flood damages, nor does it imply that land outside of mapped hazard areas will be free from damage or earth movement in a hazard event. This Chapter shall not create liability on the part of the City of Corvallis, any officer or employee thereof, or the Federal Insurance Administration, for any flood

damages or other hazard damages that result from reliance on this Ordinance or any administrative decision lawfully made hereunder. Compliance with the minimum standards established by this Chapter is not intended to relieve any private party from liability for the design or construction of development which causes damage or injury by increasing flooding or aggravating an existing and known hazard.

Section 4.5.40 - PROCEDURES

Compliance with the provisions of this Chapter shall be determined through the development review processes identified in Section 1.2.110 of Chapter 1.2 - Legal Framework. Applications for Excavation and Grading Permits, Building Permits or other permits for structures on sites containing the 100-year Floodplain or other Natural Hazard areas, as defined in Section 4.5.20, shall be submitted and reviewed to ensure compliance with specifications referenced herein; and to ensure that development is reasonably safe from anticipated hazards. Such applications for Excavation and Grading Permits, Building Permits or other permits for structures also include those for needed for Manufactured Dwellings. Other development activities as described in this provision include, but are not limited to, mining, dredging, filling, grading, paving, and excavating.

- a. Development Application** - Development applications for all properties containing or abutting a mapped Natural Hazard area shall accurately indicate the locations of these features and the location of any proposed development. Development applications shall include Excavation and Grading Permits, Building Permits, Public Improvements by Private Contract Permits (PIPC), and any land use application identified in Chapter 2.1 - Comprehensive Plan Amendment through Chapter 2.14 - Partitions, Minor Replats, and Lot Line Adjustments. The Building Official, City Engineer, or Community Development Director may determine that the following information is not necessary in conjunction with permits for work that would not exacerbate hazard conditions in any way.

- b. Required Information, General** - All such development applications shall include the following information:
 1. A site plan showing the proposed development on the site, drawn to a standard scale and including an illustrated scale for use in reductions;
 2. Location of all proposed infrastructure necessary to serve the proposed development. Such infrastructure includes streets, driveways, water, sanitary sewer, and storm drainage;
 3. Land uses within 300 ft. of the subject property;

4. Title block;
5. North arrow and bar scale;
6. Date(s) of field check(s);
7. A grading plan, if grading is to occur, showing existing and finished contours on the site, at two- ft. contour intervals;
8. Sources of information, such as national, state, or local soil survey maps; and City maps such as Comprehensive Plan and Zoning Maps, the Natural Hazards Map, the Significant Vegetation Map, the Riparian Corridors and Wetlands Map; and date and scale of aerial photos, etc.; and
9. Any other submittal requirements identified for development in areas with specific Natural Hazards, as specified in sections 4.5.50, 4.5.60, and 4.5.70.

Section 4.5.50 - STANDARDS FOR AREAS OF SPECIAL FLOOD HAZARD - 100 YEAR FLOOD PLAIN

4.5.50.01 - Definitions and Related Standards

a. 100-year Floodplain, 0.2-ft. Floodway, and Floodway Fringe -

1. 100-year Floodplain - The 100-year Floodplain is a land area adjacent to a river, stream or other water body that is subject to a one percent chance of flooding in any given year. The Floodplain is divided into two sections: the Floodway and Floodway Fringe areas. The 100-year Floodplain is mapped by the Federal Emergency Management Agency (FEMA) on Flood Insurance Rate Maps (FIRMs) and is the area subject to Base Flood regulations. See Figure 4.5-1 - Components of 100-year Floodplain; and Floodway, Floodplain - 100-year, Flood, 100-year, Base Flood, Floodway Fringe, and Figure 1.6-16 - Floodplain Cross Section in Chapter 1.6 - Definitions.
2. 0.2-ft. Floodway - The 0.2-ft. Floodway is defined as the river channel or other watercourse and the adjacent land areas that must be reserved in order to discharge the Base Flood (100-year Flood) without cumulatively increasing the water surface elevation more than 0.2 ft. See Figure 4.5 -1 - Components of 100-year Floodplain, and Floodway, 0.2-ft. in Chapter 1.6 - Definitions.

3. Floodway Fringe - The Floodway Fringe is defined as the area of the 100-year Floodplain lying outside of the 0.2-ft. Floodway. See Figure 4.5-1 - Components of 100-year Floodplain; and Floodway Fringe and Floodway, 0.2-ft. in Chapter 1.6 - Definitions.

- b. **Relationship of 0.2-ft. Floodway and Floodway Fringe to Regulated Riparian Corridors** - Areas of the 0.2-ft. Floodway and Floodway Fringe that fall within a Regulated Riparian Corridor are also subject to the provisions of Chapter 4.13 - Riparian Corridor and Wetland Provisions. Where regulations are in conflict, the most restrictive shall apply. See Riparian Corridor, Regulated in Chapter 1.6 - Definitions.

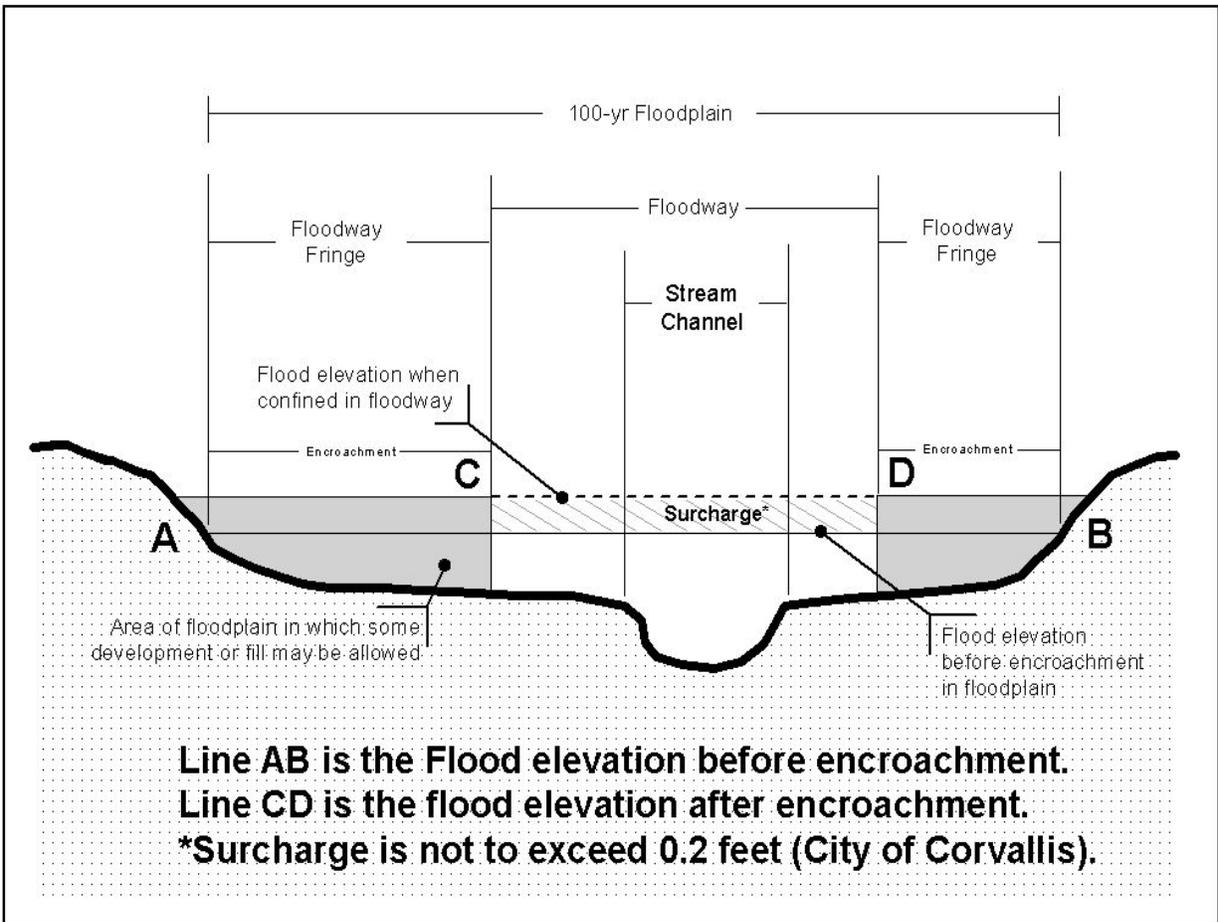


Figure 4.5-1 - Components of 100-year Floodplain

4.5.50.02 - Additional Application Requirements within the 100-year Floodplain

In addition to the application requirements in Section 4.5.40, the following information is required with development applications involving property in the 100-year Floodplain:

- a. Elevation** - Elevation in relation to the National Geodetic Vertical Datum 1929 (NGVD29), of either the:
 1. Lowest finished floor level of all new structures. This includes basements and attached garages, electrical equipment (except utility meters), heating and ventilation equipment, plumbing, air conditioning equipment, and/or other service facilities (including ductwork); or
 2. Elevation to which any existing structure has been or is proposed to be flood-proofed; and certification by a registered professional engineer that the flood-proofing methods for any nonresidential structure meet the flood-proofing criteria in Section 4.5.50.08.c.4, below;
- b.** A description of the extent to which any Floodplain or Watercourse is proposed to be altered or affected as a result of proposed development;
- c. Topographic Survey** - A topographic survey of the development site, showing existing and proposed topography in two-ft. contour intervals. The survey shall indicate the location of Top-of-bank, consistent with the definition in Chapter 1.6 - Definitions. The survey shall show the 0.2-ft. Floodway boundary and the 100-year Floodway Fringe boundary. The survey shall also show the location of existing and proposed improvements on the site, including structures, landscaping, parking areas, and other impervious surface areas. The survey shall be drawn to scale and shall note the distance from Top-of-bank to the improvements on the site;
- d. Base Flood Elevation** - The applicable Base Flood elevation;
- e.** All necessary permits from those governmental agencies from which approval is required by federal or state law, including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334, as amended, shall be obtained, or obtaining such permits shall be a Condition of Approval to be satisfied prior to issuance of any construction permit.

4.5.50.03 - City Responsibility for Flood Elevation Records

It shall be the responsibility of the City to record and maintain a public record of elevation and flood-proofing information for new construction and Substantial Improvements and other related information as required for submittal by this Chapter.

4.5.50.04 - Interpretation of Flood Insurance Rate Map and Other Floodplain Boundaries

When there appears to be a conflict between a mapped boundary and actual field conditions, the City Engineer shall determine the exact location of the boundaries of the Floodplain. Where FEMA Base Flood elevation information is unavailable for flood hazard areas, the City Engineer shall obtain, review, and reasonably utilize any Base Flood elevation and Floodway data as a basis for applying standards in the Floodway Fringe, 1.0-ft. Floodway, and 0.2-ft. Floodway.

4.5.50.05 - Incentives for Relocating Structures, Parking Lots, and other Impervious Surfaces Outside of the 100-Year Floodplain

Existing structures, parking lots, and other impervious surface areas that are removed from the 100-year Floodplain will qualify for the benefits in “a,” and “b,” below. Additionally, new development is also eligible for the benefits in “a,” and “b,” below, in areas of the 100-year Floodplain where such development is allowed, including identified portions of the Willamette River, Mary’s River, Millrace Floodplain, and Partially Protected local Stream areas.

a. Allowed Intensification -

1. Residentially Zoned Properties - Development or redevelopment of a residentially zoned property, or of a group of contiguous residentially zoned properties, may transfer density from portions of the site within the 0.2-ft. Floodway Fringe to portions of the site outside of the 0.2-ft. Floodway Fringe to the extent allowed by use of the development standards in the next most intensive development zone. However, this intensification is only allowed provided that, in resultant development, no structures or parking areas are located within the 0.2-ft. Floodway Fringe portion of the site.

2. Nonresidentially Zoned Properties for which at Least 25 Percent of the Total Site Area is within the 100-year Floodplain -

- a) Allowed building height of the underlying zone may be increased by 10 ft. if all improvements, including buildings and parking areas, are removed from at least 75 percent of the site area within the Floodplain. This is not a cumulative standard and cannot be combined with height exceptions allowed elsewhere in this Code.
- b) Allowed building height of the underlying zone may be increased by 20 ft. if all improvements, including buildings and parking areas, are removed from 100 percent of the site area within the Floodplain. This is not a cumulative standard and cannot be combined with height exceptions allowed elsewhere in this Code.

- b. Reduction of Impervious Surface Area for Development Sites with at Least 50 percent of Their Area within the 100-year Floodplain -** When a development site has at least 50 percent of its site area within the 100-year Floodplain, the height of structures may be increased by 10 ft. above the height normally allowed in the applicable underlying development zone if development or redevelopment of the site results in pervious surface area for at least 50 percent of the entire development site. Gravel, paving, concrete, and structures are all impervious. This is not a cumulative standard and cannot be combined with height exceptions allowed elsewhere in this Code.

4.5.50.06 - Standards in the 0.2-ft. Floodway -

- a. Encroachments -** No encroachments are allowed within the 0.2-ft. Floodway, with the exception of bridges, infrastructure, utilities, or Water-dependent Uses, for which it may be demonstrated, through hydrologic and hydraulic analyses performed in accordance with standard engineering practices, that the proposed encroachment would not result in any increase in flood levels within the community during the Base Flood discharge. Encroachments include fill, new construction, Substantial Improvements, except as provided in "c.3," below, and other development. Development within the 0.2-ft. Floodway shall comply with all applicable state and federal requirements. Construction of these facilities must be shown to cause minimal harm to the Properly Functioning Condition of the stream. These improvements shall be subject to the City's Engineering Design Standards.

- b. Watercourse Alterations** - Watercourse alteration by artificial means is prohibited, with exceptions only for emergency management purposes or as mandated by state or federal actions that supercede local authority. For riverine situations, prior to the alteration or relocation of a Watercourse, the applicant who is authorized for such an alteration must notify the Oregon Department of State Lands (DSL) and submit copies of such notification to the City Engineer. The applicant is required to submit copies of said notification to those adjacent communities that the City Engineer determines should receive such notification. The applicant shall submit to the City Engineer certification provided by a registered professional engineer, assuring that the flood carrying capacity of an altered or relocated Watercourse can and will be maintained.
- c. Limitations and Exceptions to Activities in the 0.2-ft. Floodway** - In addition to the requirements of the underlying zone, the limitations and exceptions in "1," through "3," below, shall apply to activities within the 0.2-ft. Floodway. Where applicable state or federal regulations provide greater restrictions, such regulations shall apply. All necessary local, state, and federal approvals shall be secured prior to the commencement of earth movement or construction in these areas.
1. Removal of Vegetation - Removal of vegetation from the 0.2-ft. Floodway is prohibited, except for the following purposes, as approved by the City Engineer:
 - a) Stream restoration and enhancement programs;
 - b) Removal of Invasive and/or Noxious Vegetation as defined in Chapter 1.6 - Definitions. If necessary in conjunction with vegetation removal, non-rip-rap erosion control measures shall be utilized;
 - c) For the development of Water-related or Water-dependent Uses, provided they are designed and constructed to minimize impact on the existing Riparian Vegetation;
 - d) Removal of emergent in-channel vegetation likely to cause flooding events that result in structural damage;
 - e) Mowing/cutting of vegetation in a 20-ft. perimeter around structures for fire hazard prevention;

- f) Continuation of agricultural activities occurring on a property prior to December 31, 2004, such as grazing livestock, growing crops, etc. However, the use of herbicides, or other pesticides, the application of synthetic fertilizers, and the storage of toxic materials in these areas is subject to applicable state and federal regulations and is also subject to the restrictions set forth in the Corvallis Municipal Code; and
- g) Removal of Hazardous Trees - Requests for removal of Hazardous Trees, except in emergency circumstances, shall be reviewed by the City Urban Forester (or another qualified arborist) and approved, conditionally approved, or denied by the Community Development Director. Any trees removed shall be replaced by like native species or alternative approved native species listed on the City of Corvallis Native Plant List.

2. Maintenance within the 0.2-ft. Floodway -

- a) The limitations imposed by this Section do not preclude the routine maintenance of existing structures in the 0.2-ft. Floodway.
- b) Maintenance of lawns, non-native riparian planted vegetation, and landscaping shall be kept to a minimum. Additionally, the application of herbicides or other pesticides, and the application of synthetic fertilizers is subject to applicable state and federal regulations and developed properties shall be subject to the restrictions set forth in the Corvallis Municipal Code;
- c) Where replanting is done, native species shall be used, with the exception of continuing agricultural uses, as specified in Section 4.5.50.06.c.1.f;
- d) Maintenance pruning of existing trees shall be kept to a minimum and shall be in accordance with the American National Standards Institute (ANSI) A300 standards for Tree Care Operations. Under no circumstances shall the maintenance pruning be so severe that it compromises the tree's health, longevity, and resource functions;

- e) Vegetation within utility easements shall be kept in a natural state and replanted when necessary with native plant species. However, no trees shall be planted within utility easements; and
 - f) Disposal of yard waste or other organic materials is prohibited within the Top-of-bank boundary of any Stream, and is regulated by restrictions in the Corvallis Municipal Code.
3. Existing Structures Constructed Prior to December 4, 1984 - Existing structures that were constructed prior to December 4, 1984, and are located in the area between the 1.0-ft. Floodway and the 0.2-ft. Floodway shall not be considered Nonconforming Structures for the purposes of this Chapter. Additionally, Substantial Improvement or replacement within the same footprint is permitted. Such replacements shall comply with the mandatory construction standards in Sections 4.5.50.08.b and 4.5.50.08.c.

4.5.50.07 - Standards in High Protection Floodway Fringe Areas

The following standards shall apply to activities and development in High Protection Floodway Fringe areas, as identified on the Natural Hazards Map. Generally, these areas contain the 100-year Floodplain of local Streams, but not the portions of the Millrace and Willamette and Mary's River 100-year Floodplains within the City Limits boundary, as of December 31, 2004.

In addition to the requirements of the underlying zone, the following limitations and exceptions shall apply to activities within the High Protection Floodway Fringe. Where applicable state or federal regulations provide greater restrictions, such regulations shall apply. All necessary local, state, and federal approvals shall be secured prior to the commencement of earth movement or construction in these areas.

- a. **Removal of Vegetation** - Removal of vegetation from High Protection Floodway Fringe areas is prohibited, except for the following purposes, as approved by the City Engineer:
 - 1. Stream restoration and enhancement programs;

2. Removal of Invasive and/or Noxious Vegetation as defined in Chapter 1.6 - Definitions. If necessary in conjunction with vegetation removal, non-rip-rap erosion control measures shall be utilized;
3. For the development of Water-related or Water-dependent Uses, provided they are designed and constructed to minimize impact on the existing Riparian Vegetation;
4. Removal of emergent in-channel vegetation likely to cause flooding events that result in structural damage;
5. Mowing/cutting of vegetation in a 20-ft. perimeter around structures for fire hazard prevention;
6. Continuation of agricultural activities occurring on a property prior to December 31, 2004, such as grazing livestock, growing crops, etc. However, the use of herbicides, or other pesticides, the application of synthetic fertilizers, and the storage of toxic materials in these areas is subject to applicable state and federal regulations, and is also subject to the restrictions set forth in the Corvallis Municipal Code;
7. Maintenance and protection of the function of City utilities and transportation facilities located within Floodway Fringe areas; and
8. Removal of Hazardous Trees - Requests for removal of Hazardous Trees, except in emergency circumstances, shall be reviewed by the City Urban Forester (or another qualified arborist) and approved, conditionally approved, or denied by the Community Development Director. Any trees removed shall be replaced by like native species or alternative approved native species listed on the City of Corvallis Native Plant List.

- b. Building, Paving, and Grading Activities** - Within High Protection Floodway Fringe areas, the placement of structures or impervious surfaces, as well as grading, excavation, and the placement of fill, is prohibited except as stated below. Exceptions to the Floodway Fringe restrictions may be made for the purposes identified in items "1," through "7," of this Section, provided they are designed and constructed to minimize adverse impacts to Stormwater and Floodplain Functions within the Floodway Fringe, and comply with the mandatory construction standards in 4.5.50.08.b and 4.5.50.08.c.

1. Replacement or Relocation of Existing Buildings - Replacement or relocation of existing buildings, either within the building's original building footprint, or with the same or reduced square footage area elsewhere in the Floodplain portion of the site. A relocation of an existing building within the same square footage area, but located elsewhere within the Floodplain portion of the site, is only allowed if the relocated structure enhances Stormwater and Floodplain Function. The relocation shall be considered to enhance Stormwater and Floodplain Function if it furthers any of the following goals without worsening any other goal:
 - a) Replaces standard construction with flow-through construction;
 - b) Moves the structure to a higher elevation;
 - c) Moves the structure further from the Top-of-bank of the adjacent Watercourse;
 - d) Reduces the amount of impervious surface area in the Floodway Fringe;
 - e) Does not negatively impact non-noxious Riparian Vegetation. Invasive and/or Noxious Vegetation is defined in Chapter 1.6 - Definitions; and/or
 - f) Maintains or reduces the volume of floodwater displacement.

2. Replacement or Relocation of Existing Structures Other than Buildings - Replacement or relocation of structures other than buildings either within the original footprint, or with the same or reduced square footage elsewhere within the Floodplain portion of the site. A relocation of an existing structure other than a building, within the same square footage area, but located elsewhere within the Floodplain portion of the site, is only allowed if the relocation enhances Stormwater and Floodplain Function. The relocation shall be considered to enhance Stormwater and Floodplain Function if it furthers any of the following goals without worsening another goal:
 - a) Moves the paved area to a higher elevation;
 - b) Moves the paved area farther from the Top-of-bank of the adjacent Watercourse;

- c) Reduces the amount of impervious surface area in the Floodway Fringe; and
 - d) Does not negatively impact non-noxious Riparian Vegetation. Invasive and/or Noxious Vegetation is defined in Chapter 1.6.
- 3. Additions to existing structures that either:
 - a) Fall below the threshold of Substantial Improvement as defined in Chapter 1.6 - Definitions; or
 - b) Will not result in the filling of additional Floodway Fringe area, such as a second story addition or Flow-through Design construction;
- 4. Location and construction of streets, utilities, bridges, bicycle, and pedestrian facilities. Location and construction of such facilities within High Protection Floodway Fringe areas must be deemed necessary to maintain a functional system by the City Engineer. This Code, City Transportation and Utility Master Plans, and other adopted City plans shall guide this determination. The design standards of Chapter 4.0 - Improvements Required with Development shall be applied to minimize the impact to the Floodway Fringe area;
- 5. Redevelopment of utility operations existing as of December 31, 2004, is also permitted. Required riparian easement areas shall be re-vegetated consistent with Section 4.13.50.d.1 and Section 4.13.50.d.2 of Chapter 4.13 - Riparian Corridor and Wetland Provisions;
- 6. Development of Water-related and Water-dependent Uses, including associated drainage facilities, water and sewer utilities, stormwater detention and retention facilities, flood control projects, and drainage pumps. These improvements shall be subject to the City's Engineering Design Standards;
- 7. Erosion control or flood control measures that have been approved by the Oregon Department of State Lands (DSL), the U.S. Army Corps of Engineers, or other state or federal regulatory agency with jurisdiction in this area. Erosion control or flood control measures shall either utilize bio-engineering methods other than rip-rap, or shall utilize rip-rap only to address an imminent hazard to a structure built prior to December 31, 2004. If utilized, the rip-rap installation shall be

designed by a Professional Engineer Licensed by the State of Oregon and approved by the Oregon Department of Fish and Wildlife; and

8. Development associated with a Minimum Assured Development Area that would be allowed in accordance with Chapter 4.11 - Minimum Assured Development Area (MADA).

c. Subdivisions, Land Partitions, and Property Line Adjustments - For properties with Natural Resources or Natural Hazards subject to Chapter 4.5 - Natural Hazard and Hillside Development Provisions, Chapter 4.12 - Significant Vegetation Protection Provisions, or Chapter 4.13 - Riparian Corridor and Wetland Provisions, no Subdivision, Partition, or Lot Line Adjustment shall create new lots or parcels unless each new and remaining lot or parcel contains:

1. An area unconstrained by Natural Resources or Natural Hazards;
2. An area that includes Formerly Constrained Areas; or
3. Contains an area that includes the areas in c.1. and c.2. above;

and that area is equal to or greater than the Minimum Assured Development Area for the zone or zones in which the development site falls.

Exceptions to this requirement are lots created for public park purposes and privately- or publicly-owned lots completely contained within land zoned Conservation-Open Space. New Subdivisions and Partitions may contain common open space tracts for the purpose of protecting Natural Resources and/or avoiding Natural Hazards.

d. Maintenance within Floodway Fringe Areas - The limitations imposed by this Section do not preclude the routine maintenance of allowed or pre-existing structures and landscaped areas.

1. Maintenance of lawns, non-native riparian planted vegetation and landscaping shall not expand lawn areas or remove or damage any non-hazardous tree. A lawn area is defined as vegetated area mowed to an 18-in. or less height;
2. The application of herbicides or other pesticides, and the application of synthetic fertilizers are subject to applicable state and federal

regulations; and developed properties shall be subject to the restrictions set forth in the Corvallis Municipal Code;

3. Where replanting is done, native species shall be used, with the exception of continuing agricultural uses, as specified in Section 4.5.50.07.a.6;
4. Maintenance pruning of existing trees shall be kept to a minimum and shall be in accordance with the American National Standards Institute (ANSI) A300 standards for Tree Care Operations. Under no circumstances shall the maintenance pruning be so severe that it compromises the tree's health, longevity, and resource functions;
5. Vegetation within utility easements shall be kept in a natural state and replanted when necessary with native plant species. However, no trees shall be planted within utility easements; and
6. Disposal of yard waste or other organic materials is prohibited within 25 ft. of the Top-of-bank boundary of any Stream, and is regulated by restrictions in the Corvallis Municipal Code.

4.5.50.08 - Standards in Partial Protection Floodway Fringe Areas

The following standards shall apply to activities and development in Partial Protection Floodway Fringe areas, as identified on the Natural Hazards Map. These areas contain the portions of the Millrace and Willamette and Mary's River 100-year Floodplain within the City Limits boundary, as of December 31, 2004; and specific portions of local Streams as noted on the Riparian Corridors and Wetlands Map.

In addition to the requirements of the underlying zone, the following limitations and exceptions shall apply to activities within the Partial Protection Floodway Fringe. Where applicable state or federal regulations provide greater restrictions, such regulations shall apply. All necessary local, state, and federal approvals shall be secured prior to the commencement of earth movement or construction in these areas.

- a. **Volumetric Exchange** - To compensate for the deposition of fill materials or construction of flood-proofed buildings within any portion of the 100-year Floodplain, an equal amount of material shall be removed from the same property or development site to ensure that the available flood volume of the 100-year Floodplain is not reduced. In addition, the following provisions shall apply:

1. Material removed from the site shall not be taken from Significant Natural Resource areas as mapped on the Corvallis Significant Vegetation Map and Riparian Corridors and Wetlands Map, and shall be removed consistent with all requirements of this Code and other applicable City policies;
2. Areas of fill and excavation shall be designed to accommodate floodwater flows and shall not create barriers to the flow of floodwater. Proposals to alter topography in the Floodplain must demonstrate that they will not result in alteration of hydrology or flow regimes that would cause erosion, unwanted ponding, or other problems;
3. Volumetric exchange will not be required of buildings within the Floodway Fringe constructed with Flow-through Design, but will be required of flood-proofed structures within the Floodway Fringe;
4. Dikes are prohibited in these areas;
5. The volume of a stormwater detention facility necessary to accommodate the designed-for storm event shall not count as an element of volumetric exchange; and
6. Provisions allowing the use of volumetric exchange shall apply only to areas within the Floodway Fringes of the Millrace and the Willamette and Marys Rivers.

b. Parking Limitation - to Reduce Impervious Surface Area in the Floodplain -

1. Where permitted, no expansion, redevelopment, or development of a parking lot containing four or more parking spaces within any portion of the Floodway Fringe shall contain more than the minimum amount of parking that would be required per Chapter 4.1 - Parking, Loading, and Access Requirements, unless "a," or "b," below, is true. Parking lots within the Floodway Fringe may be reduced to 80 percent of the minimum parking required by Chapter 4.1. To achieve greater than minimum parking in the Floodway Fringe, parking area shall:
 - a) Be constructed of pervious materials, such as grass-crete; or

- b) Be contained in a multi-story structured parking facility with at least 50 percent of the provided parking located above ground level and utilizing Flow-through Design. If this option is used, the parking lot may contain up to 130 percent of the required parking amount.

2. Compact Spaces - Where parking lots are permitted in the Floodway Fringe:

- a) 40 percent of the parking spaces within new and redeveloped parking lots shall be compact spaces; and
- b) If existing parking lots within the Floodway Fringe are permitted to expand, per the provisions of this Chapter, all additional parking spaces created in the expanded parking lot shall be compact spaces, until the 40 percent threshold in “a,” above, is reached for the overall parking lot.

c. Construction Standards within the 100-year Floodplain -

1. General Standards for All Construction - Development within the Floodway Fringe (Zones A, AH, A1-A30, AE, AO, and A99 on the Flood Insurance Rate Map), including residential and nonresidential structures and the public and private facilities serving these structures, shall adhere to the following standards so as to minimize damage from flooding. Although other types of construction are allowed by this Code, Flow-through Designs are preferable. These standards in “a,” through “c,” below, shall apply to all construction within the Floodway Fringe. In addition, the standards in “2,” through 5,” below apply, as applicable.

- a) All necessary permits shall be obtained from those governmental agencies from which approval is required by federal or state law, including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334, as amended. If obtaining such permits is a Condition of Approval for a land use application, such Condition of Approval shall be satisfied prior to issuance of any construction permit.

- b) All Land Division and Building Permit applications, including the placement of mobile and Manufactured Dwellings within special flood hazard zones A, A1-A30, AE, AH, AO, and A99, shall be reviewed for conformance with these standards. Land Division and mobile or Manufactured Dwelling Facility proposals shall:
- 1) Be consistent with the need to minimize flood damage;
 - 2) Locate and construct utilities such as sewer, gas, electrical, and water systems to minimize or eliminate flood damage;
 - 3) Provide adequate drainage to reduce exposure to flood hazards;
 - 4) Design new and replacement water systems within flood prone areas to minimize or eliminate infiltration of flood waters into the systems; and
 - 5) Design new and replacement sanitary sewer systems within flood prone areas to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters. On-site waste disposal systems are not allowed.
- c) Flood Protection Construction Standards -
- 1) All new construction and Substantial Improvements shall be designed (or modified) and adequately anchored to prevent flotation, collapse, or lateral movement of the structure resulting from Hydrodynamic and Hydrostatic Loads, including the effects of buoyancy;
 - 2) All mobile and Manufactured Dwellings shall be anchored to prevent flotation, collapse, or lateral movement, and shall be installed using methods and practices that minimize flood damage. Anchoring methods may include, but are not limited to, use of over-the-top or frame ties to ground anchors as approved by the Building Official; and

- 3) All building materials not elevated one ft. above Base Flood elevation shall be constructed with materials that resist, and methods that minimize, flood damages.

2. Standards for Recreational Vehicles -

- a) For the purposes of this Section, Recreational Vehicle is defined as a vehicle which includes all the following characteristics:
 - 1) Built on a single chassis;
 - 2) 400 sq. ft. or less in size when measured at the largest horizontal projection;
 - 3) Designed to be self-propelled or permanently towable by a light duty truck; and
 - 4) Designed primarily not for use as a permanent dwelling, but as temporary living quarters for recreational, camping, travel, or seasonal use.
- b) All Recreational Vehicles placed on sites within Zones A, AH, A1-A30, AE, AO, and A99 shall either:
 - 1) Be on the site for fewer than 180 consecutive days;
 - 2) Be fully licensed and ready for highway use; or
 - 3) Meet all standards of Section 60.3 (b) (1) of the National Flood Insurance Program Regulations and the elevation and anchoring requirements for Manufactured Dwellings in Paragraph (c)(6) of Section 60.3.

3. Residential Construction -

- a) New construction and Substantial Improvement (as defined in Chapter 1.6 - Definitions) of any residential structure, including mobile and Manufactured Dwellings, shall have the lowest floor elevated to a minimum of one ft. above Base Flood elevation. Lowest floor includes basements and attached garages, and electrical (except utility meters), heating, ventilation, plumbing,

and air conditioning equipment and other service facilities (including ductwork).

b) Accessory structures and fully enclosed nonhabitable areas below the lowest floor that are subject to flooding are prohibited, unless designed to automatically equalize Hydrostatic flood forces on exterior walls by allowing for the entry and exit of flood waters. Designs for meeting these requirements shall meet standards outlined in the adopted Oregon Structural Specialty Code and shall meet or exceed the following minimum criteria:

- 1) A minimum of two openings having a total net area of not less than one sq. in. for every sq. ft. of enclosed area subject to flooding shall be provided;
- 2) The bottom of all openings shall be no higher than one ft. above grade; and
- 3) Openings may be equipped with screens, louvers, or other coverings or devices provided that they permit the automatic entry and exit of flood waters.

4. Nonresidential Construction -

a) New construction and Substantial Improvement of any commercial, industrial, or other nonresidential structure shall either have the lowest floor elevated a minimum of one ft. above the level of the Base Flood elevation, or accomplish the alternative approach "1," through "3," below. Lowest floor includes basements and attached garages, and electrical (except utility meters), heating, ventilation, plumbing, and air conditioning equipment and other service facilities (including ductwork). The alternative approach includes:

- 1) Flood-proofing the lowest floor together with attendant utilities and sanitary facilities, so that the structure is watertight a minimum of one ft. above the Base Flood level;

- 2) Having the structural components of the lowest floor capable of resisting Hydrostatic and Hydrodynamic Loads and effects of buoyancy; and
 - 3) Having the alternative design certified by a registered professional engineer or architect, stating that the design and methods of construction are in accordance with accepted standards of practice for meeting provisions of this subsection, based on his/her development and/or review of the structural design, specifications, and plans.
- b) Designs for meeting the requirements in “a,” above, shall meet standards outlined in the adopted Oregon Structural Specialty Code.
- 1) Nonresidential structures that are elevated and not flood-proofed must have structural components capable of resisting Hydrostatic and Hydrodynamic Loads and effects of buoyancy, for space below the lowest floor.
 - 2) Applicants proposing to flood-proof nonresidential buildings shall be notified that the flood insurance premiums shall be based on rates for structures with a lowest floor that is one ft. below the flood-proofed level.
- d. **Subdivisions, Land Partitions, and Property Line Adjustments** - Subdivisions, Lot Line Adjustments, and Minor Land Partitions that would create parcels or lots that cannot be developed in conformance with the regulations contained in this Chapter are prohibited, with the exception of lots created for public park purposes.

Section 4.5.60 - STANDARDS FOR DEVELOPMENT IN STEEPLY SLOPED AREAS

4.5.60.01 - Purposes - Steeply Sloped Areas Provisions -

It is the purpose of these regulations to:

- a. **Provide supplementary development regulations to underlying zones to ensure that development occurs in such a manner that protects:**
 1. The natural and topographic character and identity of these areas;

2. Environmental resources;
 3. The aesthetic qualities and restorative value of lands; and
 4. The public health, safety, and general welfare;
- b.** Accomplish “a,” above, by ensuring that development does not create soil erosion, sedimentation of lower slopes, slide damage, flooding problems, and severe cutting or scarring; and
 - c.** Encourage development that is responsive to natural topography and allows for a reasonable use that complements the natural and visual character of the City.

4.5.60.02 - Applicability -

Steeply sloped areas are identified on the Corvallis Natural Hazards Map. The Natural Hazards Map provides information regarding the location of steep slopes on property within the Corvallis Urban Growth Boundary.

- a.** The following standards regulate development on areas with slopes of 15 percent or greater, which are slopes identified as having a significant hazard potential;
- b.** In addition to these regulations, the Hillside Development standards in Section 4.5.80 apply to development in areas with slopes of 10 percent or greater; and
- c.** No portion of this Code shall preclude the Building Official’s authority to require geotechnical reports and other analyses, as deemed necessary, and in compliance with the City’s currently adopted Oregon Structural Specialty Code. All construction in these areas shall be subject to currently adopted Oregon Structural Specialty Code requirements.

4.5.60.03 - Topographic Mapping Requirements -

Applications for development on properties containing areas of 15 percent slope or greater, as indicated on the Natural Hazards Map, shall include a topographic map of the development site showing two-ft. contour intervals for the entire site. This information can be obtained from the Natural Hazards database, or the applicant may submit a topographic survey prepared and stamped by a licensed surveyor or

civil engineer. In either case, the topographic map shall include the following information:

- a. The topographic map shall differentiate between the following slope increments:**
 1. equal to, or greater than 35 percent;
 2. equal to, or greater than 25 percent, but less than 35 percent; and
 3. equal to, or greater than 15 percent, but less than 25 percent.
- b.** The topographic map shall also indicate the location of all existing and proposed improvements on the development site, including existing and proposed structures; driveways, parking areas, and other impervious surface areas; and proposed retaining walls. The topographic map shall also generally indicate the location of existing trees and landscaping on the development site.

4.5.60.04 - Site Assessment -

- a. Site Assessments are required:**
 1. In conjunction with development proposals on areas with slopes of 15 percent or more; and
 2. For development in Landslide Hazard areas, as stipulated in Section 4.5.70 of this Code;
- b.** The Site Assessment is an overview of site conditions, as well as a professional evaluation of whether or not additional studies are needed prior to development on a property. The Site Assessment shall be completed and stamped by either a Certified Engineering Geologist or by a Licensed Civil Engineer, licensed in the Specialty of Geotechnical Engineering. At a minimum, the Site Assessment shall include the following elements:
 1. A field investigation of the site and vicinity;
 2. A discussion of geologic hazards, if any;
 3. Suitability of the site for proposed development, from a geologic standpoint;

4. If applicable, discussion of any unusual or extreme geologic processes at work on the site, such as rapid erosion, Landslide Hazard, flood hazard, rockfall, subsidence, debris run-out, or other features;
5. A list of any geologic hazards that may affect the proposed land use, including slope stability, debris flow, flooding, topography, erosion hazard, shallow groundwater, springs, expansive soils, subsidence, fault rupture, or any other geologic hazard discovered by the investigation;
6. If applicable, an identification of any areas of the site recommended to be avoided for human-occupied structures;
7. If necessary, identification of mitigation measures needed to address any anticipated geologic problems;
8. A discussion regarding the need for follow-up studies that should be conducted, such as engineering geotechnical reports, additional subsurface exploration, or more extensive soil reports; and
9. Feasibility of the site for the proposed development.

4.5.60.05 - Geotechnical (Soils Engineering) Report Requirements -

a. Geotechnical Reports are required:

1. In conjunction with development proposals in areas with slopes of 25 percent or greater;
2. When called for by a Site Assessment Report, in conjunction with development proposals in Landslide Hazard areas as stipulated in Section 4.5.70 of this Code; or
3. At the discretion of the Building Official.

b. A Geotechnical Report is intended to include:

1. Data regarding the nature, distribution and strength of existing soils;
2. Conclusions and recommendations for grading procedures;

3. Design criteria for corrective measures, including buttress fill, when necessary; and
 4. Opinion on the adequacy of the development site for the intended use considering the proposed grading in relation to soils engineering factors, such as slope stability.
- c. When a Geotechnical Report is required by this Code, it shall comply with the requirements for such reports, as prescribed in the Development Services Division's document, once developed, to be entitled "Geotechnical Report Requirements."
- d. It is the responsibility of the geotechnical engineer to provide a report and appropriate design recommendations for existing site conditions and the proposed development. The Geotechnical Report shall be completed and stamped by a Licensed Civil Engineer, licensed in the Specialty of Geotechnical Engineering by the Oregon State Board of Engineering Examiners.

4.5.60.06 - Standards for Areas with Slopes Equal to or Greater than 35 Percent -

Generally, development in these areas is strongly discouraged due to concerns with safety, ground movement, slope stability, high levels of cut and fill, and hydrological and erosion impacts. However, very limited development, as described and regulated in "a," through "d," below, may occur in areas with slopes equal to or greater than 35 percent. These standards are applicable only to the specific portions of a site which contain the specified slopes, as indicated on a topographic survey. If an applicant demonstrates, by submittal of the topographic map, that development on a property can be accommodated without encroachment into the specified slope areas, then the following standards do not apply.

- a. **Development Limitations** - Streets and utilities may be located on the specified slope areas only if it can be shown that passage through the steeply sloped area is the only viable route available to afford access to the developable portion of a property;
- b. **Site Assessment and Geotechnical Report Required** - Applications for development on the specified slope areas, including land use applications, Public Improvements by Private Contract Permits (PIPC), Excavation and Grading Permits, and Building Permit submittals, shall be accompanied by a site assessment, geotechnical report, and any other report deemed

necessary by the site assessment report. Reports shall meet the criteria identified in sections 4.5.60.04 and 4.5.60.05. Development shall conform with all recommendations and requirements established by these required reports.

- c. Compliance with Hillside Development Standards** - Development shall comply with the Hillside Development Standards in Section 4.5.80.
- d. Tree Cutting Limitations** - No tree cutting is allowed on slopes equal to or greater than 35 percent, with the exception of the following:
 - 1. Removal of a Hazardous Tree - Hazardous Trees are defined in Chapter 1.6 - Definitions. Hazardous Tree removal requests, except in emergency circumstances, are required to be reviewed and approved by the Urban Forester or the Community Development Director, following receipt of a recommendation from a Certified Arborist;
 - 2. Accommodation of development allowed under 4.5.60.06.a above; or
 - 3. Accommodation of a public or private utility for which permits have been obtained.

4.5.60.07 - Standards for Areas with Slopes Equal to or Greater than 25 Percent, but less than 35 Percent -

Development in these areas should be avoided, if feasible, due to concerns with safety, ground movement, slope stability, and erosion impacts. However, the following standards shall apply for development in areas with slopes equal to or greater than 25 percent, but less than 35 percent. These standards are applicable only to the specific portions of a site which contain the specified slopes, as indicated on a topographic survey. If an applicant demonstrates, by submittal of the topographic map, that development on a property can be accommodated without encroachment into the specified slope areas, then the following standards do not apply.

- a. Site Assessment and Geotechnical Report Required** - Applications for development on the specified slope areas, including land use applications, Public Improvements by Private Contract Permits (PIPC), Excavation and Grading Permits, and Building Permit submittals, shall be accompanied by a site assessment, geotechnical report, and any other report deemed necessary by the site assessment report. Reports shall meet the criteria

identified in sections 4.5.60.04 and 4.5.60.05. Development shall conform with all recommendations and requirements established by these required reports.

- b. **Compliance with Hillside Development Standards** - Development shall comply with the Hillside Development Standards in Section 4.5.80.

4.5.60.08 - Standards for Areas with Slopes Equal to or Greater than 15 Percent, but less than 25 Percent -

Development in these areas should be carefully evaluated, due to concerns with safety, ground movement, slope stability, and erosion impacts. The following standards shall apply for development in areas with slopes equal to or greater than 15 percent, but less than 25 percent. These standards are applicable only to the specific portions of a site which contain the specified slopes, as indicated on a topographic survey. If an applicant demonstrates, by submittal of a topographic survey, that development on a property can be accommodated without encroachment into the specified slope areas, then the following standards do not apply.

- a. **Site Assessment Required** - Applications for development on the specified slope areas, including land use applications, Public Improvements by Private Contract Permits (PIPC), Excavation and Grading Permits, and Building Permit submittals, shall be accompanied with a Site Assessment which meets the criteria identified in Section 4.5.60.04. If the Site Assessment identifies the need for a Geotechnical Report, or other reports, those reports shall be submitted with the application for development and shall be consistent with the requirements of Section 4.5.60.05. Development shall conform with all recommendations and requirements established by any and all required reports.
- b. **Compliance with Hillside Development Standards** - Development shall comply with the Hillside Development Standards in Section 4.5.80.

Section 4.5.70 - STANDARDS FOR DEVELOPMENT IN LANDSLIDE HAZARD AREAS -

4.5.70.01 - Purposes - Standards for Development in Landslide Hazard Areas -

It is the purpose of these regulations to provide supplementary development regulations to underlying zones to ensure that development occurs in such a manner as to mitigate potential impacts from landslides in Corvallis. Landslide Hazard areas include High Landslide Risk areas, Existing Landslide areas, and Landslide Debris

Runout areas. These areas are mapped on the Natural Hazards Map. The following regulations shall apply to development and other activities in identified Landslide Hazard areas.

4.5.70.02 - Applicability - Except as provided under Section 4.5.70.03, below, no person shall engage in any of the following regulated activities on properties containing or abutting the Landslide Hazard areas designated on the Corvallis Natural Hazards Map, unless it can be shown that the proposed activity is located at least 500 ft. distant from any portion of the Natural Hazard area as mapped on the Natural Hazards Map:

- a. Excavation;
- b. Fill;
- c. Installation or construction of any accessory structure with a Building Code occupancy classification other than "U;"
- d. Construction, reconstruction, structural alteration, relocation or enlargement of any building or structure for which permission is required pursuant to this Code, or the adopted Building Code; and
- e. Construction or expansion of utilities, streets, driveways, or other accessways.

4.5.70.03 - Site Assessment and Geotechnical Report Requirement -

- a. Applications for development on properties containing or abutting identified Landslide Hazard areas, including land use applications, Excavation and Grading Permits, Public Improvements by Private Contract Permits (PIPC), Building Permits, and any other development permits, shall include a Site Assessment and Geotechnical Report which meet the criteria identified in sections 4.5.60.04 and 4.5.60.05. In addition to the items identified in Section 4.5.60.05, the Geotechnical Report shall specifically address the presence, characteristics, and precise location of the identified hazard(s) on the subject property which is/are depicted on the Natural Hazards Map. If other reports are called for by the Site Assessment, these reports shall also be submitted.
- b. Prior to issuance of permits for any work on the development site, the Building Official and/or City Engineer shall review the submitted Site Assessment, Geotechnical Report, and any other required reports. Permits

shall not be issued until the Building Official and/or City Engineer approve the required reports. Upon approval of these reports, permits for construction activities may be issued, if they are in accordance with the findings and recommendations of the reports. Site inspections and submitted permit materials shall demonstrate that all necessary measures recommended by the reports and by City staff are addressed in the construction process. In no case will permits be issued for development that would increase landslide risks on the development site, or upon neighboring properties, as indicated in the approved reports.

4.5.70.04 - Required Indemnification and Release -

Prior to issuance of Building Permits for structures within or abutting Landslide Hazard areas, the applicant shall sign an agreement, provided by the City, to indemnify and release the City from potential liability resulting from damage to life or property resulting from landslides. This indemnity and release shall be recorded with the property, and shall run with the land.

Section 4.5.80 - HILLSIDE DEVELOPMENT STANDARDS

4.5.80.01 - Purposes -

Hillside Development standards have been developed for the following purposes:

- a. To plan development to fit the topography, soil, geology, and hydrology of hillsides;
- b. To align the built surface infrastructure, such as streets and waterways, with the natural contours of terrain; and to minimize cutting and filling in developments;
- c. To minimize soil disturbances and the removal of native vegetation, and to avoid these activities during winter months, unless impacts can be mitigated;
- d. To encourage the design of developments and the utilization of construction techniques that minimize erosion and surface water runoff;
- e. To balance a view of the hills with the view from the hills;
- f. To provide or maintain landscaping that enhances the identified open space resources; and

- g.** To design developments that consider landscaping management that will minimize the threat of fire on improved property and the spreading of fire to wildland habitat.

4.5.80.02 - Applicability -

Areas with slopes of 10 percent or greater are identified on the Natural Hazards Map. The following standards regulate development on areas with slopes of 10 percent or greater. In addition to these regulations, the Standards for Development in Steeply Sloped Areas in Section 4.5.60 apply to development in areas with slopes of 15 percent or greater. The Natural Hazards Map provides information regarding the location of slopes of 10 percent or greater on property within the Corvallis Urban Growth Boundary.

4.5.80.03 - Definitions -

- a. Natural Hazards Map** - The Natural Hazards Map is based on recent aerial photography (2002) and provides a level of accuracy equivalent to two-ft. contour intervals. An applicant for development may contest the accuracy of the slope data on the Natural Hazards Map by providing a slope survey prepared and stamped by a licensed surveyor. The slope survey must show Natural Grade, prior to any site grading.
- b. Individual Lot Grading** - Grading done on an individual lot, in conjunction with the development of a building, or buildings, on the lot.
- c. Mass Grading** - Site grading done in anticipation of future development, prior to grading done to accommodate specific structures. Typically, grading for street and infrastructure improvements is done in conjunction with Mass Grading. For Subdivisions, Mass Grading is done after preliminary plat approval, but prior to application for Building Permits for individual lots.
- d. Eight-ft. Standard** - Restricts grade changes (cuts or fills) in excess of eight ft. on an individual lot or development site. Cut and fill is measured vertically from Natural Grade. In no case shall a combination of cut and fill in the same location exceed 16 ft.
- e. 10- ft. Standard** - Restricts grade changes (cuts or fills) in excess of 10 ft. in an area where an exception to the Eight-ft. Standard is allowed. Cut and fill is measured vertically from Natural Grade. In no case shall a combination of cut and fill in the same location exceed 16 ft.

- f. **12-ft. Standard** - Restricts grade changes (cuts or fills) in excess of 12 ft. in an area where an exception to the Eight-ft. Standard is allowed. Cut and fill is measured vertically from Natural Grade. In no case shall a combination of cut and fill in the same location exceed 16 ft.

4.5.80.04 - Grading Regulations -

- a. **Types of Grading** - The following regulations address two types of grading, both of which are defined in Section 4.5.80.03, above:

- 1. Mass Grading; and
- 2. Grading on Individual Lots.

- b. **These regulations prescribe grading area limitations based on zoning and lot size, as set out in Sections 4.5.80.04.c.3 and 4.5.80.04.d.2.**

- 1. On development sites where both Mass Grading and Individual Lot Grading are employed, Mass Grading and Individual Lot Grading must be contained within the same grading limitation areas. The amount of gradable area allowed, per lot, is the same under both standards. This means that when Mass Grading is employed, the area that is Mass Graded on an individual lot will be the area in which Individual Lot Grading is allowed, unless the Mass Graded area is less than the maximum gradable area allowed. In this case, additional area, up to the maximum allowed, can be graded at the time of Individual Lot Grading.
- 2. The remaining provisions of this Section in “c,” through “e,” below, are organized as follows:
 - a) Mass Grading Standards;
 - b) Individual Lot Grading Standards; and
 - c) Terracing Requirements and Design Standards.
- 3. Exceptions to these standards for streets may be allowed through the Planned Development process of Chapter 2.5 - Planned Development, or through the Capital Improvements Program process.

c. Mass Grading Standards - The following standards shall apply to development throughout the City of Corvallis:

1. Maximum Allowed Cut Depth and Fill Height - The following standards govern the maximum cut depth and fill height:

Site Characteristics	Maximum Cut Depth and Fill Height
No Extenuating Conditions	Eight-ft. Standard
One Extenuating Condition	10-ft. Standard only where allowed to work around extenuating condition
Two or more Extenuating Conditions	12-ft. Standard only where allowed to work around extenuating conditions

2. Extenuating Conditions - Exceptions to the Eight-ft. Standard for Mass Grading shall be based on the following specific extenuating conditions:

- a) Street/Pedestrian Alignment - Additional Cut/Fill provides for the alignment of a necessary street or pedestrian connection. A necessary street or pedestrian connection is one which is needed to create a Block Perimeter of approximately 1,600 ft., or which is identified in an adopted City Master Plan document. A necessary street connection must comply with the slope standards in Section 4.0.60.k of Chapter 4.0 - Improvements Required with Development. Section 4.0.60.k stipulates that Arterial Streets shall not exceed a six percent grade, Collector and Neighborhood Collector Streets shall not exceed 10 percent, and Local and Local Connector Streets shall not exceed 15 percent. The width and overall extent of any street exceeding the Eight-ft. Standard shall be minimized, where feasible, to minimize grading impacts.
- b) Significant Natural Feature - Additional cut/fill is necessary to protect a Significant Natural Feature, which is defined as a feature subject to a Natural Hazards (except slopes) and/or Natural Resource Overlay on the Comprehensive Plan Map, or a Significant Tree, as defined in Chapter 1.6 - Definitions. In

the case of a preserved tree, a certified arborist must find that the proposed cut/fill exception would preserve the viability of a Significant Tree that would otherwise have been damaged by the application of the Cut and Fill Standards.

c) Detention Facilities - To accommodate stormwater detention facilities where no other viable location exists on the site.

3. Grading Area Limitations - The following requirements apply to Mass Grading in areas with slopes equal to or greater than 10 percent, as mapped on the Natural Hazards Map:

a) Low and Medium Density Residential Development Zones -

Ultimate Lot Size of Tentatively Approved Subdivision/development within Low and Medium Density Residential Development Zones	Mass Grading Regulations
< or = 6,500 sq. ft.	Grading up to 100 percent of the lot area is allowed. Grading shall comply with the Eight-ft. Standard, unless extenuating conditions are present.
> 6,500 sq. ft., but < 10,000 sq. ft.	Grading up to 6,500 sq. ft. of each lot is allowed. Grading shall comply with the Eight-ft. Standard, unless extenuating conditions are present.
> or = 10,000 sq. ft.	No Mass Grading is allowed. See standards for Individual Lot Grading

b) Medium-high and High Density Residential Development Zones -

Medium-high and High Density Residential Development Zones	Mass Grading Regulations:
RS-12, RS-12U, RS-20, and MUR Zones	For development sites <u>greater than 6,500 sq. ft. in size</u> - Graded area shall not exceed 75 percent. The Eight-ft. Standard shall apply, unless extenuating conditions are present.
	For development sites <u>less than or equal to 6,500 square ft. in size</u> - Grading of up to 100 percent of the site is allowed. The Eight-ft. Standard shall apply, unless extenuating conditions are present.

c) Nonresidential Development Zones -

Nonresidential Zones	Grading Regulations
All Commercial and Industrial Development Zones, OSU Zone, C-OS, and AG-OS Zone	For development sites <u>greater than 6,500 square ft. in size</u> - Graded area shall not exceed 75 percent. The Eight-ft. Standard shall apply, unless extenuating conditions are present.
	For development sites <u>less than or equal to 6,500 square ft. in size</u> - Grading of up to 100 percent of the site is allowed. The Eight-ft. Standard shall apply, unless extenuating conditions are present.

d. **Individual Lot Grading Standards** - These standards are in addition to Section 4.5.80.04.c, above, and apply to lots which contain slopes equal to or greater than 10 percent, as mapped on the Natural Hazards Map.

1. Maximum Allowed Cut Depth and Fill Height - The following standards govern the maximum cut depth and fill height:

Extenuating Conditions	Maximum Cut and Fill Height
No Extenuating Conditions	Eight-ft. Standard
One Extenuating Condition	10-ft. Standard only where allowed to work around extenuating condition
Two Extenuating Conditions	12-ft. Standard only where allowed to work around extenuating conditions
If lot would otherwise be unbuildable	The least extensive cut and fill necessary, not to exceed the 12-ft. Standard, to reach the Minimum Assured Development Area, as defined by Chapter 4.11 - Minimum Assured Development Area (MADA).

a) Extenuating Conditions - Exceptions to the Eight-ft. Standard for Individual Lot Grading shall be based on the following specific extenuating conditions:

- 1) Street/Pedestrian Alignment - Additional Cut/Fill provides for the alignment of a necessary street or pedestrian connection. A necessary street or pedestrian connection is one which is needed to create a block perimeter of approximately 1,600 ft., or which is identified in an adopted City Master Plan document.
- 2) Significant Natural Feature: Additional cut/fill is necessary to protect a Significant Natural Feature, which is defined as a feature subject to a Natural Hazards (except slopes) and/or Natural Resource

Overlay on the Comprehensive Plan Map; or a Significant Tree, as defined in Chapter 1.6 - Definitions. In the case of a preserved tree, a Certified Arborist must find that the proposed cut/fill exception would preserve the viability of a Significant Tree that would otherwise have been damaged by the application of the Cut and Fill Standards.

- 3) Maintain Driveway Slope - Additional Cut/Fill is necessary to allow for the construction of a driveway at a slope of 15 percent or less. It must be demonstrated, to the satisfaction of the Building Official, that other driveway alignments have been considered and are not feasible before additional Cut/Fill is authorized.

b) Locational Standards -

- 1) Within the portion of each lot within 50 ft. of the edge of public right-of-way, the combination of cuts and fills may not exceed 16 ft. from Natural Grade, as measured within a linear distance perpendicular from the edge of right-of-way to the 50-ft. boundary; and
- 2) All retaining walls must be located at least four ft. from any property line or easement line.

2. Gradable Area - In no case shall the cumulative impact of Mass Grading and Individual Lot Grading impact more site area on an individual lot than is allowed under the following standards:

a) Low and Medium Density Residential Development Zones -

Lot size within Low and Medium Density Residential Development Zones	Grading Regulations
< or = 6,500 sq. ft.	Grading up to 100 percent of the lot area is allowed. Grading shall comply with the Eight-ft. Standard, unless extenuating conditions are present. Grading must also comply with adopted Building Code standards.
> 6,500 sq. ft., but < 10,000 sq. ft.	Grading up to 6,500 sq. ft. of each lot is allowed. Grading shall comply with the Eight-ft. Standard, unless extenuating conditions are present. Grading must also comply with adopted Building Code standards.
> or = 10,000 sq. ft.	Grading area is limited to 6,500 sq. ft. + 25 percent of lot area over 10,000 sq. ft. Grading shall comply with the Eight-ft. Standard, unless extenuating conditions are present. Grading must also comply with adopted Building Code standards.

b) Medium-high and High Density Residential Development Zones -

Medium-high and High Density Residential Development Zones	Grading Regulation
RS-12, RS-12U, and RS-20 Zones	<p><u>For development sites greater than 6,500 square ft. in size</u> - Graded area shall not exceed 75 percent. The Eight-ft. Standard shall apply, unless extenuating conditions are present. Grading must also comply with adopted Building Code standards.</p>
	<p><u>For development sites less than or equal to 6,500 square ft. in size</u> - Grading of up to 100 percent of the site is allowed. The Eight-ft. Standard shall apply, unless extenuating conditions are present. Grading must also comply with adopted Building Code standards.</p>

c) Nonresidential Development Zones -

Nonresidential Development Zones	Grading Regulations
All Commercial and Industrial Development Zones, OSU Zone, C-OS, and AG-OS Zone	<p><u>For development sites greater than 6,500 sq. ft. in size</u> - Graded area shall not exceed 75 percent. The Eight-ft. Standard shall apply, unless extenuating conditions are present. Grading must also comply with adopted Building Code standards.</p>
	<p><u>For development sites less than or equal to 6,500 sq. ft. in size</u> - Grading of up to 100 percent of the site is allowed. The Eight-ft. Standard shall apply, unless extenuating conditions are present. Grading must also comply with adopted Building Code standards.</p>

e. Terracing Requirements and Design Standards - When a cut or fill, or combination thereof, exceeds eight ft. and is greater than a 25 percent slope, terracing shall be provided, as follows:

1. For cuts/fills between 8-10 ft., at least one terrace shall be provided between the two- and eight-ft. level, with a shelf no less than six ft. deep. The slope of the shelf may not exceed 20 percent.
2. For cuts/fills that are more than 10 ft., risers shall not exceed four ft. in height and shelves shall be a minimum of six ft. deep. The slope of the shelf may not exceed 20 percent.
3. Terraces shall be landscaped with a combination of ground cover plants and shrubs, planted with adequate coverage to stabilize soil in the terraced areas. Trees shall be required, at a minimum 30 ft. on-center spacing, to mitigate trees removed due to grading and to stabilize soil in the shelf area. Irrigation and maintenance for required landscaping shall be addressed as stipulated in Chapter 4.2 - Landscaping, Buffering, Screening, and Lighting.
4. Wall materials and landscaping shall be subject to final review and approval by the City Engineer and Community Development Director. Acceptable exterior wall materials include quarried stone, brick, concrete masonry, and similar quality materials. Additional flexibility shall be allowed for wall materials for retaining walls which are wholly internal to the development site, provided the materials and design meet Oregon Structural Specialty Code requirements. Retaining walls shall comply with all applicable Building Code requirements.
5. Exceptions to the terracing requirement may be allowed by the City Engineer and Community Development Director if the applicant demonstrates, with the submittal of a report from a certified arborist, qualified Stream scientist, or qualified wetlands scientist that potential impact to an existing Significant Tree or a Significant Natural Feature in the area of the cut and fill would be significantly reduced by an exception to the terracing requirement.

A Significant Natural Feature is defined in Chapter 1.6 - Definitions. In the case of a preserved tree, a certified arborist must find that the proposed retaining wall treatment would preserve the viability of a Significant Tree that would otherwise have been damaged by the application of the Cut and Fill Standards, and that the Tree's

continued growth will not adversely affect the structural integrity of the wall.

6. Per Chapter 2.12 - Lot Development Option, exceptions to the requirements in "1," through "5," above, may be granted through the Lot Development Option process, if the exceptions qualify as a Minor or Major Lot Development Option. The Lot Development Option may allow an increase in retaining wall height of up to 20 percent of the permitted height, or a reduction of shelf width of up to 20 percent of the required depth, subject to compliance with all Lot Development Option criteria in Section 2.12.30.06 of Chapter 2.12 - Lot Development Option.

4.5.90 - MAP REFINEMENTS

4.5.90.01 - Map Refinements Defined -

Map Refinements are adjustments made through professional analyses to refine the actual boundaries of some Natural Resources and Natural Hazards. Map Refinements must be made in accordance with the provisions in Chapter 4.5 - Natural Hazard and Hillside Development Provisions and Chapter 4.13 - Riparian Corridor and Wetland Provisions, and are specifically allowed to determine the location and extent of the:

- a. 0.2-ft. Floodway;
- b. 1.0-ft. Floodway, in accordance with FEMA regulations;
- c. 100-year Floodway Fringe, in accordance with FEMA regulations;
- d. Landslide Hazard areas;
- e. Slopes;
- f. Top-of-bank of Streams and rivers;
- g. Riparian Corridors, once Top-of-bank is accurately determined; and
- h. Wetlands, through delineations approved by the Oregon Department of State Lands.

4.5.90.02 - Map Refinements Provisions -

Map Refinement provisions for the 0.2-ft. Floodway, the 1.0-ft. Floodway, the 100-year Floodway Fringe, Landslide Hazard areas, and slopes are outlined below. Map Refinement provisions for Top-of-bank, Riparian Corridor, and Wetland boundaries are outlined in Chapter 4.13 - Riparian Corridor and Wetland Provisions. Map Refinements are also adjustments to resolve registration issues that may occur between different GIS layers or maps.

a. Floodplain and Floodway Boundaries - The precise locations of Floodplain and Floodway boundaries are determined as follows:

1. 0.2-ft. Floodway - Surveyed and mapped by a licensed surveyor or civil engineer, using two-ft. contour intervals established by the survey, and outlining a river channel or other Watercourse and the adjacent land areas that must be reserved in order to discharge the Base Flood (100-year Flood) without cumulatively increasing the water surface elevation more than 0.2 ft.
2. 1.0-ft. Floodway - Surveyed and mapped by a licensed surveyor or civil engineer, using two-ft. contour intervals established by the survey, and outlining a river channel or other Watercourse and the adjacent land areas that must be reserved in order to discharge the Base Flood (100-year Flood) without cumulatively increasing the water surface elevation more than one ft.
3. 100-Year Floodplain - Surveyed and mapped by a licensed surveyor or civil engineer, using the Base Flood elevations established by the Federal Emergency Management Agency (FEMA) and two-ft. contour intervals established by the survey.

b. Landslide Hazard Area Boundaries - The precise locations of Landslide Hazard area boundaries are determined by one of the following two methods:

1. Site Assessments and/or Geotechnical Reports, as required per Section 4.5.70; or
2. Information provided by the Oregon Department of Geology and Mining Industries (DOGAMI), once it has been developed and finalized by DOGAMI.

If these areas are not precisely mapped by one of these two methods, the 500-ft. setback required by Section 4.5.70.02 shall be maintained.

- c. Slope Boundaries** - The precise locations of the steep slope boundaries are determined by one of the following two methods, consistent with the provisions of Section 4.5.60.03:
1. Using the information from the Natural Hazards database and creating a topographic map of the development site showing two-ft. contour intervals; or
 2. Using a topographic survey, showing two-ft. contour intervals, prepared and stamped by a licensed surveyor or civil engineer.

4.5.90.03 - Map Refinement Procedures

Adjustments to maps consistent with the provisions of Sections 4.5.90.01 and 4.5.90.02, above, are considered to be Map Refinements and may be Ministerially adjusted on the relevant maps, with no land use process required other than a demonstrated adherence to the provisions of sections 4.5.90.01 and 4.5.90.02.

4.5.100 - MAP CORRECTIONS

No Zone Change or Comprehensive Plan Map Amendment shall be required to accomplish Map Corrections approved in accordance with the provisions outlined in this Section.

- a.** Decisions regarding Map Correction requests shall be made by the Community Development Director, as specified in sections 4.5.100.01 and 4.5.100.02, below. Upon approval of a Map Correction request, the Director shall ensure that changes are reflected in the City's affected maps and databases. Notice of such Map Correction shall be provided to decision-makers as outlined in Section 4.5.100.b, below.
- b.** When requests for five Map Corrections on any Natural Hazard or Natural Resource for which a Map Correction is allowed have been submitted to and decided upon by the Community Development Department Director, or approximately twice a year, whichever is sooner, the Map Correction requests shall be summarized in an informational memo for decision-makers so that they may review them for tracking purposes in accordance with Comprehensive Plan Policy 4.2.6. This memo shall be shared with the Corvallis Planning Commission and City Council for Map Correction requests on lands within the City limits; and with the Corvallis and Benton County Planning Commissions, the Corvallis City Council, and the Benton County

Board of Commissioners for Map Correction requests on lands within the Urban Fringe.

4.5.100.01 - Map Corrections Defined

A Map Correction is not the type of adjustment described in the Map Refinement provisions of Section 4.5.90, above. A Map Correction is, however, an actual correction to maps referencing Natural Hazards or Natural Resources other than Significant Vegetation areas, where it is found that the map depiction does not reflect the Natural Features Inventory. As the Natural Features Inventory (NFI) was the basis for developing the City's maps that reference Natural Hazards and Natural Resources, a correction to the NFI for Natural Hazards or Natural Resources other than Significant Vegetation areas could result in a correction to the related maps. These maps include the Comprehensive Plan Map, Local Wetlands Inventory Map, Official Zoning Map, Natural Hazards Map, or Riparian Corridors and Wetlands Map.

Map Correction provisions for the 100-year Floodplain and Landslide Hazard areas are outlined below. Adjustments to other hazards are not Map Corrections, but are Map Refinements and are addressed through the provisions of Section 4.5.90, above. Map Correction provisions for Riparian Corridor widths and Wetland boundaries are outlined in Chapter 4.13 - Riparian Corridor and Wetland Provisions.

- a. 100-Year Floodplain** - Map Corrections for 100-year Floodplain information may be approved by the Community Development Department Director subsequent to the approval of a Letter of Map Amendment (LOMA) by the Federal Emergency Management Agency (FEMA). The Director shall only correct the 100-year Floodplain portion of the City's maps to exactly reflect FEMA decisions.

- b. Landslide Hazard Areas** - Landslide Hazard area boundaries may be refined through the Map Refinement procedures outlined in 4.5.90, above. However, if technical data demonstrates that no Landslide Hazard exists within or near an area identified as a potential Landslide Hazard on the City's maps, a Map Correction may be accomplished to delete the Landslide Hazard indication from the maps. Such technical data must be from:
 1. A site assessment and geotechnical report; or
 2. The Oregon Department of Geology and Mining Industries (DOGAMI).

4.5.100.02 - Map Corrections Procedures -

- a. **100-Year Floodplain** - Map Corrections for 100-year Floodplain information may be requested following written verification of a Letter of Map Amendment (LOMA) approved by the Federal Emergency Management Agency (FEMA). When the FEMA determines that a LOMA should be approved, and written documentation of the approval is provided to the Community Development Director, the Director shall ensure that changes reflected in the LOMA are reflected in the City's affected maps and databases.

- b. **Landslide Hazard Areas** - There are two procedures available for a Map Correction involving the removal of a Landslide Hazard area from the Natural Hazards Map.

- 1. Removal of a Landslide Hazard Area from Determination by the Oregon Department of Geology and Mining Industries (DOGAMI) -

If in finalizing its data and maps regarding Landslide Hazard areas the Oregon Department of Geology and Mining Industries (DOGAMI) determines that no Landslide Hazard exists within or near an area identified as a potential Landslide Hazard on the Natural Hazards Map, then a Map Correction to remove indication of the Landslide Hazard area shall be done by the Community Development Department Director, following written verification of the DOGAMI's determination. When such written documentation of the determination is provided to the Director, the Director shall ensure that the changes reflected by the DOGAMI decision are reflected in the City's affected maps and databases.

- 2. Removal of a Landslide Hazard Area from Determinations Reached by a Site Assessment and Geotechnical Report -

If a property owner or property owner's legal representative provides the Community Development Department Director with the items listed in "a," below, a request to remove indication of a Landslide Hazard area from the Natural Hazards Map and other affected maps may be considered as outlined in "b," and "c," below.

- a) For a Map Correction request to consider removal of a Landslide Hazard from the Natural Hazards Map and other related maps, the following information is required:

- 1) A Site Assessment and Geotechnical Report which meet the criteria identified in sections 4.5.60.04 and 4.5.60.05. In addition to the items identified in Section 4.5.60.05, the Geotechnical Report shall specifically address the lack of presence, characteristics, and/or precise location of the identified hazard(s) on the subject property which is/are depicted on the Natural Hazards Map. If other reports are called for by the Site Assessment, these reports shall also be submitted; and
 - 2) An indemnification and release agreement in accordance with the provisions of Section 4.5.70.04;
- b) For lands within the City limits, Map Correction requests shall be reviewed by the Building Official and City Engineer, in coordination with the Community Development Department. The Community Development Director shall make the final decision. For lands within the Urban Fringe, Map Correction requests shall be reviewed by the Building Official and City Engineer, in coordination with the Corvallis Community Development Department and the Benton County Development Department. For the Urban Fringe lands, the Corvallis Community Development Department Director shall also make the final decision.
- c) To approve a Map Correction request, the Director must find that:
- 1) The information required by “a,” above, has been provided and is complete;
 - 2) The required technical reports and recommendations sufficiently demonstrate that there is no Landslide Hazard on or near the area identified on the Natural Hazards Map; and
 - 3) The required technical reports and recommendations sufficiently demonstrate that development on the subject area would not increase landslide risks on the development site, or upon neighboring properties.